



Operating Manual



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PLEASE NOTE: Information given in this Operating Manual is correct at time of going to print, however details are subject to change without notification. For the purposes of this Operating Manual, Infrared Systems Group Ltd. is sometimes referred to as 'ISG INFRASYS'.

1.0 Regulatory Information

1.1 Declaration of Conformity

The EC Declaration of Conformity for your model of ISG INFRASYS thermal imager is supplied as a separate document on your Product Documents CD-ROM.

Complying with the customer's regulatory environment as stated in the purchase order, the frequency of the thermal imager's transmitter (if fitted) is recorded inside the battery compartment and on the complementary Product Certificate.

Safe Disposal



This symbol indicates the requirement for a separate waste collection for electronic equipment, batteries and accumulators. All ISG INFRASYS products displaying this symbol must be disposed of or recycled in accordance with EU Directives 2002/96/EC (WEEE) and 2006/66/EC (batteries).



This procedure is described as follows:

Upon reaching the end of its useful life, the thermal imager must be returned to Infrared Systems Group Ltd. in the United Kingdom for suitable disposal under the WEEE directives. ISG INFRASYS will arrange collection at our expense, when notified that the item is no longer required.

Accessory items requiring safe disposal, including battery packs, can be disposed of locally under the regulatory directives of your local authority.

Export Obligations

The technology utilised in ISG INFRASYS thermal imagers is subject to export control regulation by the Government of the UK. Where an export licence applies, once obtained by ISG INFRASYS on behalf of the customer, all parties must strictly adhere to the terms and conditions pertaining to that licence. Otherwise, ISG INFRASYS's authorisation to provide maintenance and further support may be suspended or withdrawn and criminal charges may result against both ISG INFRASYS and the customer.

Where an export licence applies, a copy of the specific terms and conditions pertaining to this licence is enclosed with your product – all users are encouraged to become familiar with them. As an indicative (but not exhaustive) guide, your ISG INFRASYS thermal imager's End User Licence Standard Conditions are reproduced in the next section.

1.2 End User Licence Standard Conditions

- 1) This ISG INFRASYS thermal imager, (the "item"), is licensed by the UK Department for Business, Enterprise & Regulatory Reform for export to Fire, Search and Rescue end users only, solely for use in fire fighting, search and rescue operations within the sovereign state of the end user to whom it is originally exported. The export licence document, including all its terms and conditions, carries the force of law under the jurisdiction of the United Kingdom.

- 2) The end-user must maintain the item in their possession at all times and is responsible for its security against theft, loss, unauthorised access or use.
- 3) No loan or temporary surrender of the item is authorised.
- 4) No resale, donation, transfer or disposal by other means of the item is authorised. Therefore, when the item reaches the end of its service life, it must be returned to Infrared Systems Group Ltd. ISG INFRASYS will arrange collection at our expense, when notified that the item is no longer required.
- 5) Maintenance of the item is limited to routine preventative maintenance and installation of field replacement parts only. Disassembly and/or repair of electrical/mechanical assemblies must only be performed by the manufacturer's designated service centres.
- 6) Sale, resale or loan of the item for temporary purposes such as demonstration, rental or lease equipment is prohibited.
- 7) If the item is lost, stolen or destroyed, or unauthorised people have access to it, this must be reported to Infrared Systems Group Ltd. within 21 days. The report must include a description of the incident, to include as appropriate:
 - Who had physical possession of the item
 - What is being done to recover the item
 - Police incident report number
 - Steps taken to prevent another such event
 - If unauthorised personnel had access to the item, who allowed this and what has been done to avoid recurrence
- 8) The end-user must provide a letter of acknowledgement and acceptance of the export licence to ISG INFRASYS prior to shipment of the item.

1.3 Safety Warnings and Exclusions

All users of ISG INFRASYS Thermal Imagers must read the following safety warnings and exclusions carefully.

- 1) ISG INFRASYS thermal imagers must only be used by personnel familiar with the usage and limitations of a thermal imaging camera, including a general understanding of thermal images and how they are interpreted. It is recommended that the user has gained experience with its usage in simulated fire conditions, such as a controlled live burn situation. Usage of the ISG INFRASYS thermal imager by unauthorised, unfamiliar or untrained users in a hazardous atmosphere may result in injury or death.
- 2) The ISG INFRASYS thermal imager is not life support equipment and should not be used as such.
- 3) The ISG INFRASYS thermal imager provides a thermal image in normal vision-impairing conditions and is designed to augment your existing Standard Operating Procedures. Failure to follow Standard Operating Procedures in a hazardous atmosphere may result in disorientation, injury or death, in the unlikely event that the equipment should fail.

- 4) Always perform a visual check on the equipment prior to use to validate that it has not been damaged or degraded.
- 5) Never use the ISG INFRASYS thermal imager as the sole source of navigation. If system failure occurs, you may become disoriented or lost in a hostile environment, which could result in injury or death.
- 6) The ISG INFRASYS thermal imager is a complex, electro-optical piece of equipment and, just like any other piece of machinery or electronic system, is subject to potential failures. Should a failure occur, the user will no longer have access to the thermal images provided by the thermal imager. Tactical usage of this equipment must not deviate from Standard Operating Procedures used by personnel who do not have the benefit of the equipment.
- 7) While every effort has been made to ensure that your ISG INFRASYS thermal imager is both tough and reliable, the thermal imager is a sophisticated electro-optical system that will fail if it is abused or exposed to environments beyond its design envelope.
- 8) Repeated exposure to high temperature environments without adequate periods for the unit to self-cool may result in degradation or loss of the thermal image, or damage to the internal components. Be sure to allow adequate cool-down periods between high temperature exposures.
- 9) The ISG INFRASYS thermal imager will not provide images through glass, water, or shiny objects. These surfaces act like reflective mirrors to the system.
- 10) The ISG INFRASYS thermal imager will not provide thermal images underwater.
- 11) Batteries supplied with the ISG INFRASYS thermal imager have been selected for specific performance values. Replacement batteries must be obtained ONLY from an authorised ISG INFRASYS service centre. In addition:
 - Never try to dispose of the battery pack by burning or through exposure to a heating device such as a microwave oven – it could explode and cause injury.
 - Never try to disassemble, repair or otherwise tamper with a battery pack.
 - Never short-circuit the battery pack by contacting the terminals with a metal object.
 - Never puncture the battery pack with a sharp object or strike with a hammer or other object.
- 12) Users should be conscious of the battery life. Only enter a hazardous environment when a full battery charge is indicated on the battery charge indicator.
- 13) Failure to exit a hostile environment immediately on observation of the low battery warning may result in system failure in a hostile environment, which could result in injury or death.
- 14) The ISG INFRASYS thermal imager is not rated as "Intrinsically Safe". Do not use the system in environments or atmospheres where static or a spark could cause explosion.
- 15) The ISG INFRASYS thermal imager must be serviced only by authorised personnel. The thermal imager contains high voltage components, and therefore the user should never remove the cover due to risk of shock.

2.0 Getting Started

2.1 Checking the Supplied Accessories

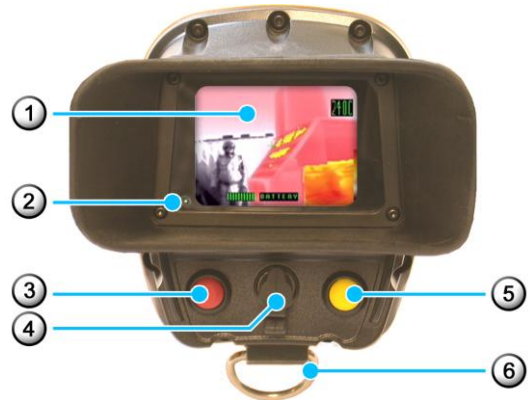
Dependent on your order, your thermal imager is supplied with one of following accessory kits:

	Standard Kit	Hard-Case Kit	Vehicle Kit
	✓	✓ x2	✓ x2
	✓	✓	-
	-	-	✓
	✓	✓	✓
	✓	✓	✓
	✓	-	✓
	-	✓	-
 (AA)	Optional	Optional	Optional
	Optional	Optional	Optional
	Optional	Optional	Optional
	Optional	Optional	Optional
 (USB Kit)	Optional	Optional	Optional
	Optional	Optional	Optional
	Optional	Optional	Optional
	Optional	Optional	Optional

Please visit our website at www.isgfire.co.uk for more information on Optional Accessories.

2.2 Understanding Parts and Controls

- 1) LCD viewing screen
- 2) Power indicator (green LED)
- 3) Red button – Power/Functions
- 4) BNC Video Connector & Dust-Cap
- 5) Yellow button – Advanced Menu Functions
- 6) 'D' ring for lanyard
- 7) Hand straps & Pads
- 8) Mounting bracket
- 9) Battery contacts
- 10) Battery compartment (contains thermal imager identification and warning labels)
- 11) Lens window



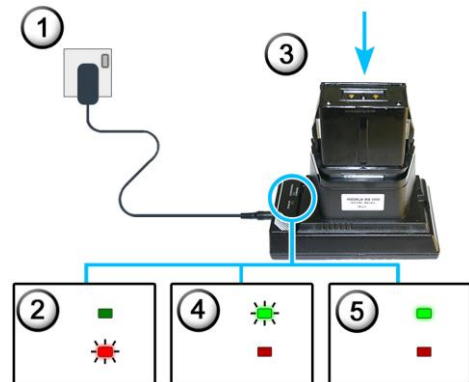
Note

The colour and display type shown here may be different to your model of thermal imager.

2.3 Preparing the Power Source

Charging the Supercell-Plus Rechargeable Batteries

- 1) Connect the mains adaptor to the battery charger and then connect to a mains power outlet.
- 2) Switch on mains power – RED LED will flash denoting 'Standby Mode'.
- 3) Insert battery into the charger.
- 4) GREEN LED will flash denoting 'Charge Conditioning Mode'.
- 5) Battery is fully charged – GREEN LED will light continuously denoting 'Maintenance Mode'.



Note

The Supercell-Plus batteries are fully charged before leaving the factory and can be used immediately.

CAUTION!

To prevent fire or shock hazard, do not expose the battery charger unit and power adaptor to rain or moisture.

2.4 Preparing the AA Alkaline Battery Cassette (optional)

- 1) Depress release button and allow the inner cassette to slide out.
- 2) Insert 10 AA size alkaline batteries into the inner cassette, +ve and –ve orientation are shown inside the cassette.

Note

It is recommended that the –ve end of the cell be inserted before pushing the +ve end into position.

- 3) Depress the button, replace the inner cassette into the outer cassette and release to lock.



2.5 Fitting and Removing the Battery

Inserting the Battery

- 1) Insert the battery into the battery compartment.
- 2) Push.
- 3) Click in to lock.



Removing the Battery

- 1) Simultaneously depress the battery release catches on both sides.
- 2) Slide out.
- 3) Remove.



2.6 Preparing for Handling

Adjusting the Hand Straps

- 1) Peel back Velcro pad and adjusting straps.
- 2) Hold your thermal imager with your hand inserted through the hand strap and adjust the straps until comfortably fitted.
- 3) Fasten the Velcro pad and adjusting straps.



Attaching the Lanyard

Attach lanyard to 'D' ring.



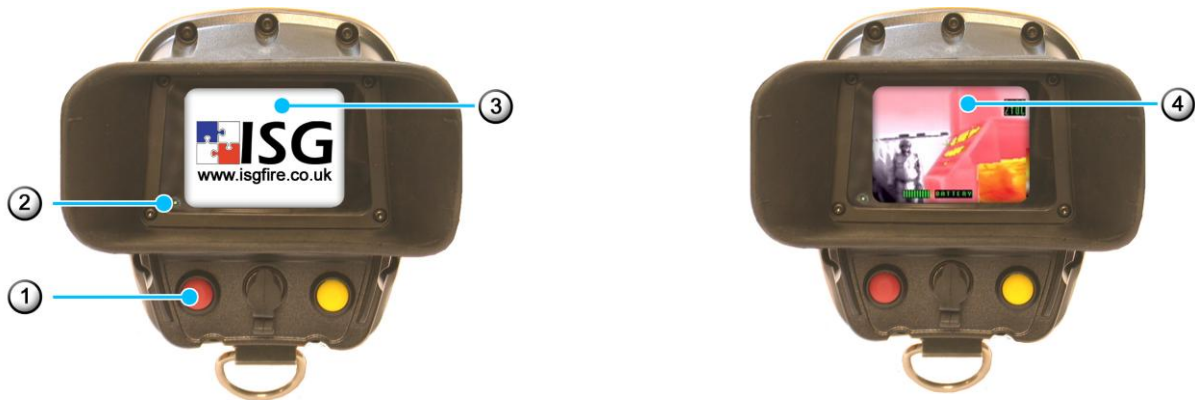
Holding the Thermal Imager

The thermal imager should be held with either hand fully inserted into the hand strap.



2.7 Turning On the Power

- 1) Press the red button.
- 2) The power indicator lights.
- 3) Start up screen is displayed on LCD viewing screen denoting initialisation.
- 4) After initialisation, the thermal imager operates in Normal Imaging Mode and a thermal image is displayed.



CAUTION!

Always fit a fully charged battery prior to use in an emergency operation.

2.8 Turning Off the Power

- 1) Press and hold the red button to activate the shutdown menu which can be accessed in normal imaging mode:



- 2) To turn off:



- 3) Or to cancel the command:



- 4) Power light switches off indicating shutdown complete.

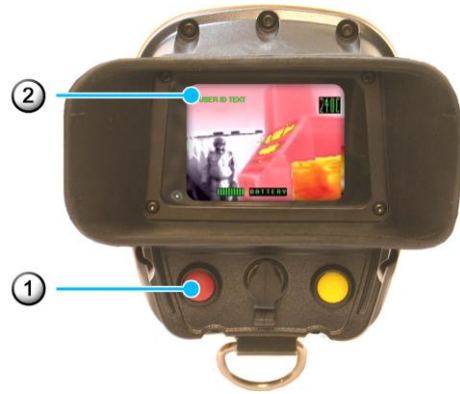
CAUTION!

Never disconnect the battery without undertaking this turn off procedure.

2.9 Personalised User Identification

The Personalised User Identification is pre-configured prior to leaving the factory, and, for security reasons, cannot be altered by the user.

- 1) Turn on the thermal imager.
- 2) After initialisation, the personalised user identification is displayed for approximately 10 seconds.

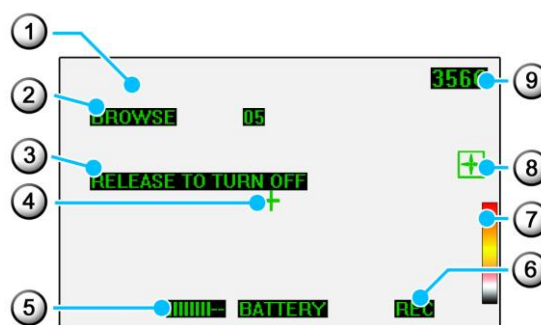


3.0 Basic Functions

All basic functions are fully automatic and require no operator intervention. Please note that operating the button functions in a manner other than that described in this operating manual may result in unexpected performance from the camera.

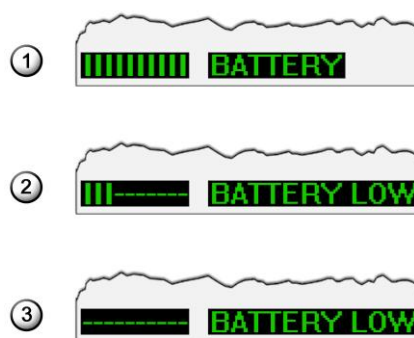
3.1 Display Information & Warnings

- 1) Active Display
- 2) Function messages
- 3) Sub-function messages
- 4) DTM Crosswire
- 5) Battery Power Level Indicator
- 6) Advanced Functions Menu
- 7) Colour Temperature Scale Indicator
- 8) Transmitter ON (if fitted)
- 9) Measured Temperature



3.2 Battery Charge Indicator

- 1) Battery fully charged
- 2) Battery low
- 3) Battery critically low



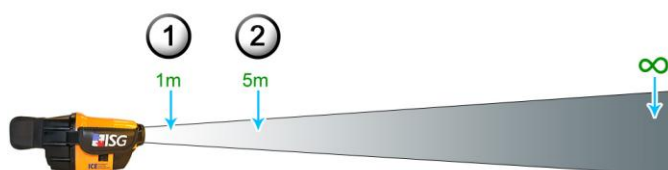
CAUTION!

Automatic shutdown occurs shortly after battery critically low status is displayed.

3.3 Focus Range

The thermal imager automatically provides a focussed image of the scene over the range of distances indicated:

- 1) K250 / SD250 / Elite Lite / M250 (Option A)
- 2) M250 (Option B)



3.4 ICE™ – Intelligent Contrast Enhancement

ICE™* (Intelligent Contrast Enhancement) is a patented innovation from ISG INFRASYS. This technology operates to automatically enhance background contrast when viewing extremely hot objects. This improves visibility for the user as hot objects and cooler surroundings are clearly visible simultaneously. The extra information is vital when viewing extreme temperatures in Thousand-Plus Mode and increases the effectiveness of firefighting, whilst enhancing safety for the firefighter.

The adjacent image captured in Thousand-Plus Mode illustrates how ICE™* improves visibility in practice –

- 1) The detail in the fire is clearly displayed whilst;
- 2) The background is maintained in high contrast.

* Patent No. GB2435977



3.5 ICE™ Sensitivity Modes

The ICE™ system thermal imager incorporates two distinct sensitivity modes and selects the appropriate mode automatically by analysing the thermal characteristics of the scene.

Normal Mode

'Normal Mode' is automatically selected when viewing low to medium ambient temperature scenes and/or when there is little burning material in the scene.

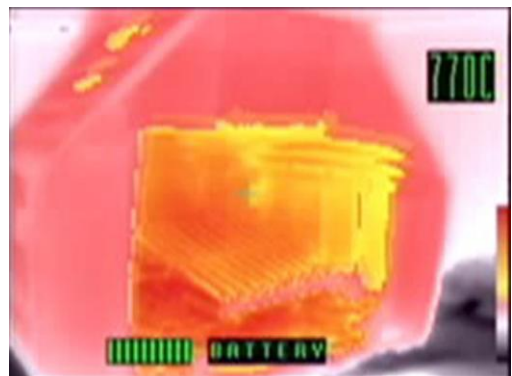
In this mode the thermal imager's sensitivity is optimised to maximise the clarity of the lower-temperature parts of the scene, enabling crystal-clear imaging of the ambient scene as well as displaying small, localised hotspots up to 500 °C without saturation.



Thousand-Plus Mode

'Thousand-Plus Mode' is automatically selected when viewing extreme heat conditions, for example, in flash over situations or other extreme emergency situations where safety could be compromised.

In this mode the dynamic range is set to maximum to provide clear imaging of scene temperatures in excess of 1000 °C without saturation, designed to allow easy analysis of structures and burning materials while retaining excellent visibility of low-



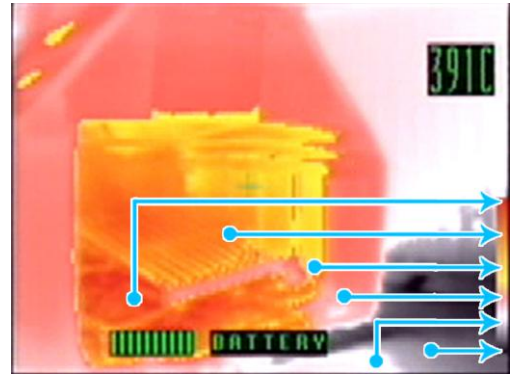
temperature background detail to facilitate rapid egress.

Note

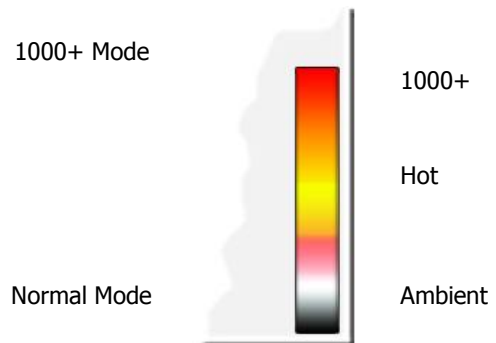
When the thermal imager switches mode, a momentary interruption of the displayed image may be experienced.

3.6 Colour Temperature Scale Indicator

The graduated scale colour palette provides a visual indication of the range of scene temperatures detected, enabling rapid recognition of hot spots.

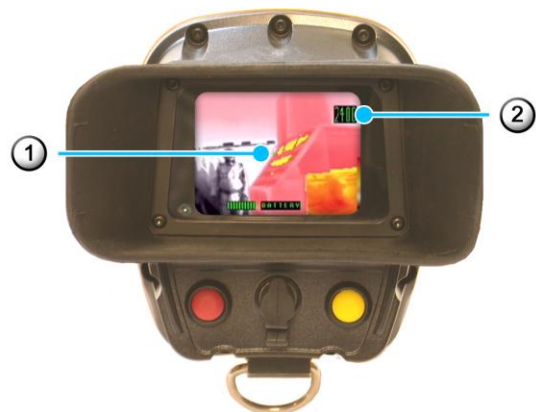


ICE™ (Intelligent Contrast Enhancement) Single Palette Colour Temperature Scale Indicator.



3.7 Direct Temperature Measurement (DTM)

- 1) Aim the crosswire directly over the object to be measured.
- 2) Read the temperature.



Notes

The measured temperature is based on an assumed target emissivity of 0.95.

The measurement indicated is not a measure of air temperature.

Unless specified otherwise at the time of order, the unit of measurement, in terms of degrees Centigrade or Fahrenheit, is preset at the factory to the normal standard for the designated country.

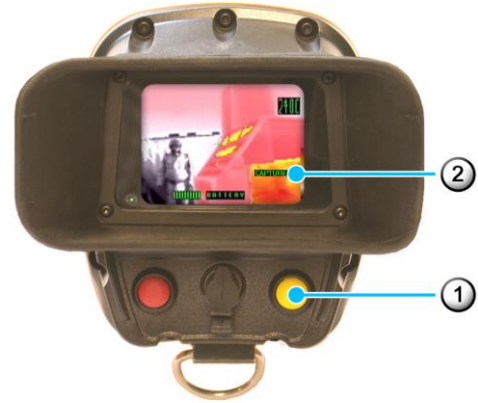
In order to obtain a temperature measurement of a hot object in a scene, the thermal imager may switch between different sensitivity modes, dependent on the scene conditions at the centre of the cross wire. This is completely normal and the thermal imager will revert to the appropriate sensitivity mode once the hot object is removed from the scene.

4.0 Advanced Functions

All advanced functions are selectable using the advanced functions menu.

4.1 Entering the Advanced Functions Menu

- 1) Press and hold the yellow button.



- 2) Advanced functions menu operates as follows:

(Thermal imager without integral transmitter)



(Thermal imager with integral transmitter)



- 3) To select a function, release the yellow button when the desired function is displayed:

(Thermal imager without integral transmitter)

REC - to capture image

ABORT – to abort advanced functions menu without selecting a function

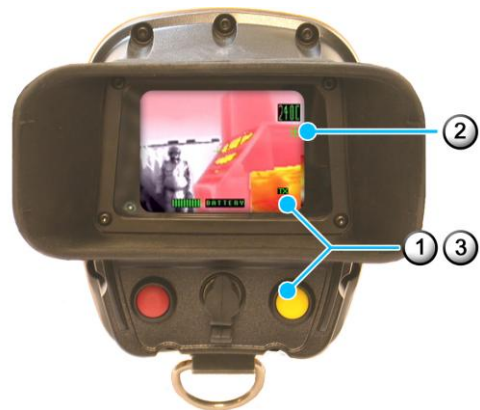
(Thermal imager with integral transmitter)

REC - to capture image

TX – to turn transmitter on/off

ABORT – to abort advanced functions menu without selecting a function

4.2 Transmitting Live Video Using the Video Transmitter Function (optional feature)



1) Turn transmitter on:



2) The transmitter icon signifies transmitter is operating.

3) To turn transmitter off:



CAUTION!

Upon the battery power reaching **BATTERY LOW**, the transmitter icon will flash. It is recommended to turn off the transmitter to preserve sufficient power to facilitate egress.

4.3 Capturing Images

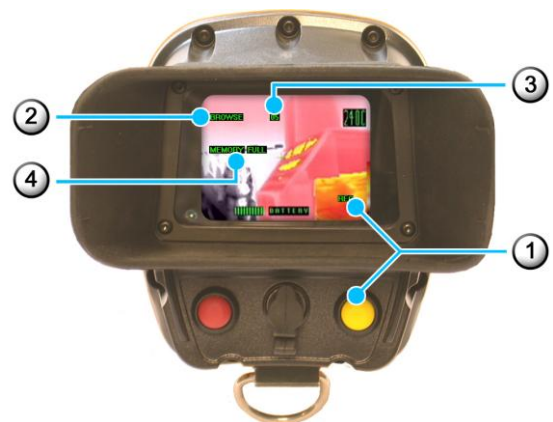
The Image Capture feature allows the user to capture and store up to 30 thermal images that can be browsed on the LCD viewing screen and deleted as required.

Record image:

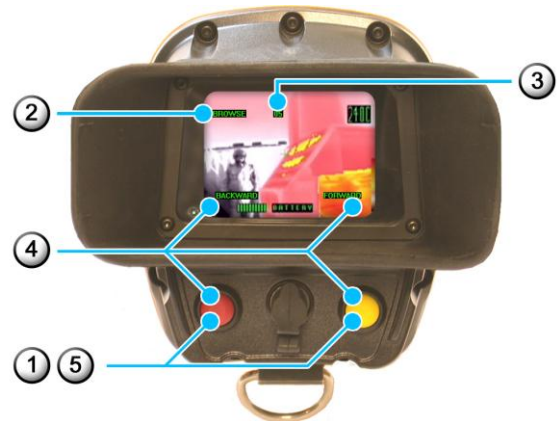
STORING / Σ – indicates scene is being captured. Returns to **CAPTURE MODE** when complete.

05 – indicates number of the captured image.

MEMORY FULL – indicates memory is full.



4.4 Browsing Captured Images



- 1) Enter Browse Mode:



- 2) **BROWSE** – indicates thermal imager is operating in Browse Mode.
- 3) Indicates memory location of the captured image in view, displays from 1 to 30.
- 4) Change memory location to browse a different image:



- 5) To exit Browse Mode:



Notes

The Browse Mode onscreen information disappears after approximately 5 seconds and reappears when any button is pressed.

If memory is empty, camera automatically exits to Capture Mode.

Power cannot be turned off in Browse Mode.

If image was captured using x2 magnification, a X2 logo will appear in the bottom left corner of the image being browsed.

CAUTION!

The thermal imager cannot view live scenes in Browse Mode (unless empty); entering this mode during fire fighting should be avoided.

4.5 Deleting a Single Captured Image

- 1) In Browse Mode, view the image to be deleted.



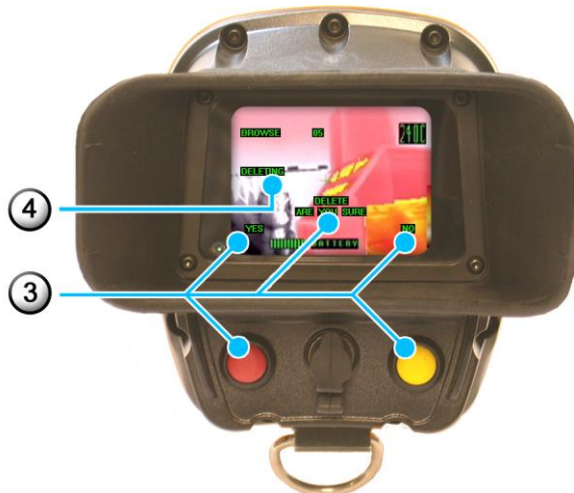
- 2) Select deletion of a single image:



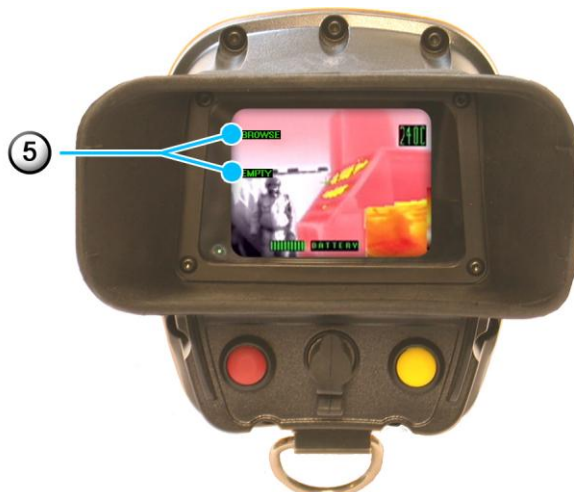
- 3) **DELETE - ARE YOU SURE** – confirm deletion:

- YES
- NO

- 4) **DELETING** – if **YES** is selected, the thermal imager deletes the image. If **NO** is selected, the thermal imager returns to Browse Mode.

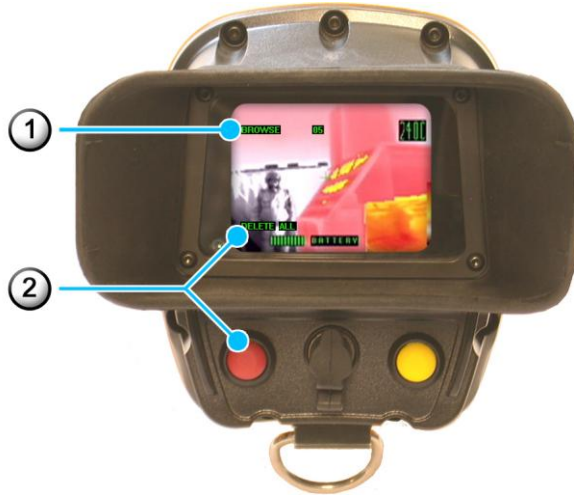


- 5) **BROWSE EMPTY** is displayed when all memory locations are empty. Live video is displayed.



4.6 Deleting All Captured Images

- 1) In Browse Mode, view any image.



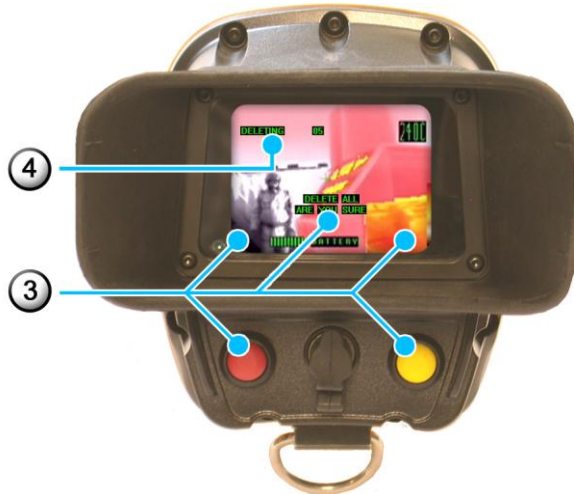
- 2) Select deletion of all images:



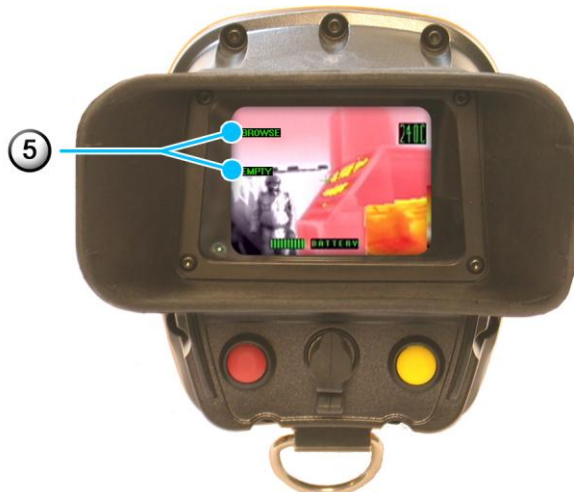
- 3) **DELETE ALL - ARE YOU SURE** – confirm deletion:



- 4) **DELETING 05** – if **YES** is selected, the thermal imager deletes each image consecutively. If **NO** is selected, the thermal imager returns to Browse Mode.



- 5) **BROWSE EMPTY** is displayed if all memory locations are empty. Live video is displayed.



4.7 Operating the Zoom Feature

The Zoom feature allows the user to zoom in to the scene using x2 magnification.

- 1) Press and release the red button to cycle between x1 and x2 magnification.
- 2) **X2** – indicates which magnification the thermal imager is currently using.
- 3) Capture an image in any magnification using the instructions described in Section 4.3.



CAUTION

Care should be taken when using the zoom feature in a firefighting situation due to a risk the user could become disoriented. The user should not deviate from following their standard operating procedures.

5.0 Extended Functions Using Optional Accessories

This section briefly describes the extended functions of your ISG INFRASYS thermal imager when used with optional accessories – please visit our website for more information.

5.1 Mounting and Charging Your Thermal Imager in a Vehicle

The **Vehicle Mounted Charger** enables the ISG INFRASYS thermal imager to be securely mounted and charged in a vehicle without removal of the battery. Designed to withstand crash impact and operates from 12 V to 24 V DC, or alternatively AC mains (option dependant).



Note

Please follow the supplied operating instructions.

5.2 Alternative Methods of Handling Your Thermal Imager

Grip handles attach to the mounting bracket and provides alternative means of handling the thermal imager.



Pistol Grip



Action Grip

Fitting the grip

- 9) Align the grip with the Mounting Bracket.
- 10) Push the grip into the Mounting Bracket.
- 11) Slide the grip towards the rear of the camera until you hear a 'click'.



Removing the grip

- 1) Push and hold the button downwards on the grip.
- 2) Slide the grip towards the front of the camera.
- 3) Pull the grip forwards and away from the camera.



5.3 Alternative Methods of Securing Your Thermal Imager

Retractable Lanyard

A compact retractable type lanyard with auto-rewind facility prevents the thermal imager falling from your grip whilst retained at an accessible position.



Tripod Mounting

Any standard tripod can be mounted to the mounting bracket to provide a stationary installation.

5.4 Viewing Live Transmitted Video from Your Thermal Imager

The following types of **ISG INFRASYS transmission receivers (optional accessory)** can be used to receive and view live transmitted video from your ISG INFRASYS thermal imager if fitted with a transmitter.



Please follow the supplied operating instructions.

5.5 Viewing Thermal Images on an External Monitor

- 1) Turn on the thermal imager.
- 2) Connect the video cable to the thermal imager's BNC type video output.
- 3) Connect the video cable to the external monitor.

Note

The thermal imager is configured at the factory for the normal TV standard of the designated country, either as PAL or NTSC, unless requested otherwise at the time of order.



5.6 Viewing, Transferring or Storing Thermal Images to a PC

The **USB video kit** enables several functions to be performed using a PC:

- View live thermal video produced by the thermal imager
- Capture still thermal images direct to the PC
- Download captured thermal images stored in the thermal imager's internal memory
- Record live thermal video direct to the PC

To install the **USB video kit** please see the attached instructions.

6.0 Trouble Shooting

If you have a problem with your thermal imager, refer to this checklist. Consult your dealer or the ISG INFRASYS Service Centre if problem persists.

6.1 Power Source

Problem	Cause	Solution	Sect.
The power does not turn on or the power LED will not light	Battery pack is exhausted	Replace or charge the battery	2.5
	Battery pack is not correctly attached	Attach the battery pack correctly	2.5
	Battery contacts are not making connection	Clean battery contacts of the thermal imager and batteries	2.2
The thermal imager switches off by itself	Battery pack is exhausted	Replace or charge the battery	2.5
The battery will not charge	Battery pack is not fully inserted into charger	Insert the battery fully	2.5
	Battery charging contacts are not making connection	Clean charging contacts of the batteries and charger	2.2
The thermal imager will not switch off	The thermal imager is in browse mode	Exit browse mode	4.4
The transmitter does not switch on	Battery pack is exhausted	Replace or charge the battery	2.5
The transmitter icon is flashing	The battery power is becoming too low to power the transmitter	Replace or charge the battery	2.5

6.2 Imaging

Problem	Cause	Solution	Sect.
The image is not appearing on the screen or appears blurred	The lens window is dirty	Clean the lens window	2.2
	An obstacle is obstructing the thermal imager lens window	Remove the obstacle	2.2
The thermal imager will not focus	The thermal imager lens window is dirty	Clean the lens	2.2
	An obstacle is obstructing the thermal imager lens.	Remove the obstacle	2.2
The thermal imager produces a clicking sound every 15 to 30 seconds	The thermal imager is refreshing the image. This is normal.	No fault	-
The image frequently pauses for a fraction of a second	The thermal imager is changing mode upon experiencing significant changes in scene temperature. This is normal.	No fault	-
Cannot see the heat source through the window, in the water or through rubble	Thermal imagers cannot produce images through infrared-opaque materials such as glass or water	No fault	-
Can only view a still image	The thermal imager is in browse mode	Exit browse mode	4.4

6.3 Functions

Problem	Cause	Solution	Sect.
The digital temperature measurement does not seem to represent the room temperature	The DTM only measures the temperature of an object within the scene at the centre of the cross wire, and not the air temperature	No fault	-
The thermal imager is functioning but the buttons do not function correctly or respond very slowly	Most functions require pressing and holding down the buttons to prevent accidental activation	Perform the correct switching operations	4.0
Cannot capture an image	The internal memory is full	Delete some images	4.5, 4.6
Cannot download images to my computer	Incorrect video transfer equipment used	Obtain a USB video kit	5.6
	Computer specification compatibility issues	Ensure PC meets minimum specification	5.6

7.0 Additional Information

7.1 Maintenance Information

- Following use, the thermal imager should always be cleaned and inspected for damage.
- In the event of damage being detected (for example, cracked or broken window or housing), the thermal imager should be withdrawn from service immediately and returned to an authorised service centre for repair.
- The thermal imager should be cleaned using warm soapy water and non-abrasive cleaners. Allow the thermal imager to dry before replacing it in its carry case.
- Ensure all battery contacts of the thermal imager and the batteries are clean and free from debris as this may prevent electrical connection.
- It is recommended that the IR window and display be treated with anti-fog solutions as used on SCBA/BA facemasks.
- To ensure long service life, it is recommended that the thermal imager and its accessories are stored in a temperate environment (15°C to 25°C, moderate humidity) at all times.
- The batteries should always be removed from the thermal imager before storage for extended periods.

7.2 Warranty

ISG INFRASYS warrants the thermal imager and its accessories to be free from defects in materials and workmanship for a period of twenty-four (24) Months from the date of shipment from the factory. This warranty is in lieu of all other warranties expressed or implied.

This warranty applies to the following:

- Thermal imager
- Batteries
- Battery charger system
- Video transmitter/receiver (if fitted)
- Carry case
- Standard and optional accessory items

This warranty does not apply to fabric components as they can be adversely affected by undue exposure to heat, sun, ozone or other hostile conditions.

Warranty Disclaimer

This warranty shall be null and void if ISG INFRASYS determines that the thermal imager or its accessories have been damaged by neglect, misuse, accident, abuse, power surges, over-exposure to heat, abnormal wear and tear, or other perils outside the design tolerances of the thermal imager.

The following additional conditions shall void all warranties:

- Unauthorised repair, modification or alteration of the thermal imager and/or its accessories
- Damage caused by failure to use and/or maintain the thermal imager and/or its accessories in accordance with the manufacturer's written instructions
- Damage in shipping
- Damage caused by use of a non-approved battery or battery charger
- Non-service related damage
- Damage caused by improper storage or transportation

Note

THE USE OF NON-FACTORY AUTHORISED PARTS OR COMPONENTS, OR FAILURE TO MAINTAIN AND USE THE SYSTEM AS DIRECTED IN THE OPERATING MANUAL, VOIDS ALL WARRANTIES.

Responsibilities of ISG INFRASYS Under The Warranty

Provided the end user/distributor detects and reports (in writing) defects to ISG INFRASYS within the warranty period, ISG INFRASYS shall either repair or replace either the components or the System, at its sole option, once its responsibility has been determined under the warranty. This repair/replacement shall be the user's sole and exclusive remedy.

ISG INFRASYS shall determine responsibility under the warranty and advise the end user/distributor of warranty coverage or any charges associated with repair/replacement of components or the system outside warranty-covered repair/replacement.

Following a warranty repair by ISG INFRASYS, all carriage, insurance and freight costs associated with the shipment of the material back to the end user/distributor, shall be borne by ISG INFRASYS.

Any such repair, whether under warranty or otherwise, shall not be construed as an extension of the warranty period.

Responsibilities of the End User and/or Distributor Under the Warranty

To maximise speed of return and repair, ISG INFRASYS operates the Service Direct facility, available to all customers within the European Union – please contact ISG INFRASYS for full details and to obtain an RMA code (see below). In all other cases, the end user shall return the unit to the authorised ISG INFRASYS distributor from whom the thermal imager was purchased. Thereafter it is the responsibility of the distributor to return the unit in accordance with the instructions herein.

The end user/distributor shall obtain a Returned Material Authorisation (RMA) code prior to returning the thermal imager or accessory. The end user/distributor shall ship the returned

materials to ISG INFRASYS with the RMA code prominently displayed on the outside of the packaging and a headed letter with the return address and a brief description of the fault placed inside the package.

Non-Warranty Repairs

In the event that ISG INFRASYS determines that the repair is not covered by the warranty, ISG INFRASYS shall inform the end user/distributor and provide an estimated cost of repair. Upon receipt of a purchase order from the end user/distributor, ISG INFRASYS shall undertake the repair and return the thermal imager. All carriage, insurance and freight costs shall be borne by the end user/distributor. Any such repair, whether under warranty or otherwise, shall not be construed as an extension of the warranty period.

Transfer of the Warranty

ISG INFRASYS's obligations under this warranty are limited to the original end user unless prior written consent has been issued by ISG INFRASYS to transfer the Product to another location, end user or application.

7.3 Technical Specifications

Thermal Imager

1) Physical Characteristics

Dimensions (L x W x H):	SD250/M250 (Option 1 & 2): 284 mm x 144 mm x 145 mm (11.2" x 5.7" x 5.7") K250/Elite Lite: 185 mm x 130 mm x 149 mm (7.3" x 5.1" x 5.9")
Weight (excluding battery):	1.2 kg (2.6 lbs)
Shell colour:	K250/SD250: Orange and Black M250/Elite Lite: Yellow and Black
Shell material:	Radel R 5100
Hand strap material:	Kevlar
IR lens window:	Hard-coated Germanium
Tripod mount:	¼" BSW fixing

2) Display Characteristics

Technology:	Colour liquid crystal display (LCD)
Viewing mode	SD250/M250 (Option 1 & 2): Universal (Up-to-Face or Arms Length) K250/Elite Lite: Wide angle (Arms Length)
Size (diagonal):	SD250/M250 (Option 1 & 2): 165 mm (6.5") equivalent magnified K250/Elite Lite: 90 mm (3.5")
Luminance:	SD250/M250: 230 cd / m ² K250/EliteLite: 250 cd / m ²

3) Environmental Characteristics

Operating temperature:	-35 °C to +450 °C (-31 °F to 840 °F) (limited exposure)
Operating duration:	20 minutes @ 120 °C (250 °F) 8 minutes @ 260 °C (500 °F)
Storage temperature:	-25 °C to +55 °C (-13 °F to +131 °F) if retained in carry case
Sealing:	IP67, resists water immersion at 1.0 m (3.3') depth
Contaminant resistant:	Yes
Withstand drop:	1.8 m, (6') any orientation

4) Electrical Characteristics

Power consumption:	5 W nominal
Continuous operating time:	5 hours with SuperCell Plus batteries @ 23 °C (73 °F)
Low power warning:	Onscreen indicator

5) Infrared Characteristics

Detector:	Uncooled IR microbolometer
Sensor material:	Amorphous Silicon (ASi)
Resolution:	160 x 120
Thermoelectric cooler:	None
Spectral response:	8 µm to 14 µm
R:S (Range/Sensitivity) Ratio	8800
Sensitivity (nominal):	K250 / SD250 / M250 (Option 1) / Elite Lite: 50 mK M250 (Option 2): 100 mK
Scene update rate:	50 Hz (PAL) or 60 Hz (NTSC)
Dynamic range:	Automatic, variable dynamic range control
Modes of operation:	ICE™ (Normal & Thousand Plus)
Field of view:	K250/SD250/Elite Lite: 54° M250 (Option 1): 44° M250 (Option 2): 16°
Focus range:	K250/SD250/M250 (Option 1)/Elite Lite: 1.0 m (3.3') to infinity M250 (Option 2): 5.0 m (16.4') to infinity

6) Operational Characteristics

Pushbutton controls:	Power, Image Capture/Transmitter (if fitted)
Readiness time:	10 seconds nominal
Image optimisation:	Automatic, no operator adjustment required
Video standard:	PAL (European) or NTSC (American) TV standard
Video output:	Composite 1.0 V, 75 Ω terminated BNC
Temperature measurement:	Range: 0 °C to 1000 °C (32 °F to 1832 °F) Accuracy: ± 5 °C (0 °C to 100 °C) & ± 10% (100 °C to 1,000 °C) Emissivity: 0.95
Spot Measurement Distance	200:1
Colourisation:	ICE™ Enhanced Dual Transparent Colour
Colour temperature scale:	Single palette indicator bar
Digital Image Capture:	Saves 30 images to on-board memory
Digital Zoom	X2 magnification

Video Transmitter Characteristics

Frequency options:	FM 2.339 GHz, 2.381 GHz, 2.458 GHz and 2.474 GHz
Power:	Up to 500 mW

The frequency at which the thermal imager transmits video is stated on the label located in the battery compartment. Frequencies other than specified may be available upon request.

The customer must validate that the requested frequency complies with statutory regulations is only licensed for fire and emergency service use within the region of intended use.

SuperCell-Plus Rechargeable Batteries

Battery technology	Ni-MH Rechargeable
Recharge time:	2.5 hours nominal
Recharge cycles:	1000
Net weight:	0.52 kg (1.15 lbs)
Sealing:	IP67

Desk Top Battery Charger

PSU supply voltage:	99 to 264 VAC, 50/60 Hz
Operating voltage:	24 V
Size (L x W x H):	160 mm x 95 mm x 85 mm (6.3" x 3.7" x 3.3")
Weight (including PSU):	0.35 kg (0.77 lbs)
Operating temperature:	0 °C to 30 °C (32 °F to 86 °F)
Storage temperature:	-20 °C to +55 °C (-4 °F to +131 °F)
Sealing:	IP20

Carry Case

Size (L x W x H):	SD250/M250 (Option 1 & 2): 485 mm x 392 mm x 192 mm (1.59' x 1.29' x 0.63')
	K250/Elite Lite: 406 mm x 330 mm x 174 mm (1.33' x 1.08' x 0.57')
Weight with foam insert:	SD250/M250 (Option 1 & 2): 4 kg (8.8 lbs)
	K250/Elite Lite: 3 kg (6.6 lbs)
Certificate:	IP67 Stanag 4280 / DefStan 81-41

8.0 ISG INFRASYS Products and Support

Your thermal imager was designed by Infrared Systems Group Ltd., the world's leading supplier of handheld thermal imagers for fire fighting, search, rescue and emergency applications. ISG INFRASYS is an ISO 9001 approved company.

ISG INFRASYS specialises in the application of thermal imaging technology and has more than two decades of industry experience. We have an installed base of many thousands of units worldwide and a continuous development strategy that maintains our reputation for innovation, quality and reliability.

We expect this thermal imager to have a life of up to 10 years with regular maintenance and the modular design of ISG INFRASYS thermal imagers allows it to be upgraded with new features on an ongoing basis. Details of these can be obtained from the Company Website (www.isgfire.co.uk) or your local sales representative.

There is also a range of accessories available that will extend the application of the thermal imager, and these are detailed within this Manual and the Company website.

8.1 Service Centre

ISG INFRASYS service centre is located in the United Kingdom, where fully trained technicians can repair, maintain or upgrade your ISG INFRASYS thermal imager.

ISG INFRASYS understand the importance of the non-availability of a thermal imager and our rapid service ensures all units are returned to duty as soon as possible.

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